

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

1. (Currently Amended) A hybrid drive system for an automotive vehicle, comprising:
 - (a) an engine operable by combustion of a fuel to generate a drive force;
 - (b) an electric motor;
 - (c) an output member operatively connected to a drive wheel of the vehicle for driving the vehicle;
 - (d) a planetary gear device having a first rotary element connected to said engine, a second rotary element connected to said electric motor, and a third rotary element;
 - (e) a first clutch through which said second rotary ~~member~~ element is connected to said output member;
 - (f) a second clutch through which said third rotary ~~member~~ element is connected to said output member;
 - (g) forward-motor-drive control means for engaging said first clutch and releasing said second clutch to thereby establish a forward motor drive mode in which the automotive vehicle is driven in a forward direction by operation of said electric motor while said engine is at rest;
 - (h) forward-engine-drive control means for engaging both of said first clutch and said second clutch to establish a direct engine drive mode in which the automotive vehicle is driven in the forward direction by operation of said engine, with said planetary gear device being rotated as a unit, and for releasing said first clutch and engaging said second clutch to establish an engine-and-motor drive mode in which the automotive vehicle is driven in the forward direction by operations of both of said engine and said electric motor; and
 - (i) mode selecting means operable upon switching of a vehicle drive mode from said forward motor drive mode to one of said direct engine drive mode and said engine-and-motor drive mode, for determining whether said engine is likely to stall if said direct engine drive mode is established, and commanding said forward-engine-drive control means to establish said engine-and-motor drive mode, when it is determined that the engine is likely to stall if said direct engine drive mode is established.
2. (Withdrawn) A hybrid drive system for an automotive vehicle, comprising;
a vehicle drive power source including an engine operable by combustion of a fuel to generate a drive force, and an electric motor; and
non-cranking engine starting means operable upon switching of a vehicle drive mode from a forward motor drive mode in which the automotive vehicle is driven

by operation of said electric motor only, to an engine drive mode in which the automotive vehicle is driven by operation of said engine, said non-cranking engine starting means starting said engine by merely controlling the starting of said engine without cranking of said engine, when an operation speed of said engine is higher than a predetermined threshold, said controlling the starting of said engine comprising controlling a state in which said fuel is injected into said engine.

3. (Withdrawn) A hybrid drive system for an automotive vehicle, comprising:
 - (a) a vehicle drive power source including an engine operable by combustion of a fuel to generate a drive force, and an electric motor;
 - (b) a transmission;
 - (c) a clutch of a frictional coupling type disposed between said engine and said transmission;
 - (d) clutch-slip control means operable upon switching of a vehicle drive mode from a motor drive mode in which the automotive vehicle is driven by operation of said electric motor only, to an engine drive mode in which the automotive vehicle is driven by operation of said engine, said clutch-slip control means effecting a slipping engagement of said clutch; and
 - (e) transition-input-torque estimating means for estimating an input torque of said transmission on the basis of an engaging torque of said clutch during said slipping engagement of said clutch while the vehicle drive mode is switched from said motor drive mode to said engine drive mode.
4. (Withdrawn) A hybrid drive system for an automotive vehicle, comprising:
 - (a) an engine operable by combustion of a fuel to generate a drive force;
 - (b) an electric motor;
 - (c) an output member operatively connected to a drive wheel of the vehicle for driving the vehicle;
 - (d) a planetary gear device having a first rotary element connected to said engine, a second rotary element connected to said electric motor, and a third rotary element;
 - (e) a first clutch through which said second rotary element is connected to said output member;
 - (f) a second clutch through which said third rotary member is connected to said output member;
 - (g) forward-motor-drive control means for engaging said first clutch and releasing said second clutch, to thereby establish a forward motor drive mode in which the automotive vehicle is driven in a forward direction by operation of said electric motor while said engine is at rest;
 - (h) forward-engine-drive control means for releasing said first clutch and engaging said second clutch, to thereby establish an engine-and-motor drive mode in which the automotive vehicle is driven in a forward direction by operations of both of said engine and said electric motor;
 - (i) said first clutch being a frictionally coupling clutch; and

(j) first-clutch-releasing stand-by means operable upon switching of a vehicle drive mode from said forward motor drive mode to said engine-and-motor drive mode, said first-clutch-releasing stand-by means reducing an engaging torque of said first clutch to a value not causing slipping of said first clutch, before said first clutch is released.

5. (Withdrawn) A hybrid drive system for an automotive vehicle, comprising:

- (a) an engine operable by combustion of a fuel to generate a drive force;
- (b) an electric motor;
- (c) an output member operatively connected to a drive wheel of the vehicle for driving the vehicle;
- (d) a planetary gear device having a first rotary element connected to said engine, a second rotary element connected to said electric motor, and a third rotary element;
- (e) a first clutch through which said second rotary element is connected to said output member;
- (f) a second clutch through which said third rotary member is connected to said output member;
- (g) forward-motor-drive control means for engaging said first clutch and releasing said second clutch, to thereby establish a forward motor drive mode in which the automotive vehicle is driven in a forward direction by operation of said electric motor while said engine is at rest;
- (h) forward-engine-drive control means for releasing said first clutch and engaging said second clutch, to thereby establish an engine-and-motor drive mode in which the automotive vehicle is driven in the forward direction by operations of both of said engine and said electric motor;
- (i) said first clutch being a frictionally coupling clutch; and
- (j) clutch control means operable upon switching of a vehicle drive mode from said forward motor drive mode to said engine-and-motor drive mode, said clutch control means gradually reducing an engaging torque of said second clutch, and releasing said first clutch when a torque of said electric motor and said engaging torque of said second clutch have satisfied a predetermined relationship representative of a ratio of said torque of said electric motor and said engaging torque of said second clutch with respect to each other, which relationship is suitable for driving the vehicle in said engine-and-motor drive mode.

6. (New) The hybrid drive system according to claim 1, wherein said mode selecting means determines that the engine is likely to stall if said direct engine drive mode is established, when a speed of said output member is lower than a predetermined threshold.

7. (New) The hybrid drive system according to claim 6, wherein said predetermined threshold is a predetermined constant value.

8. (New) The hybrid drive system according to claim 6, wherein said predetermined threshold is a variable which changes with a change in said speed of said output member.

9. (New) The hybrid drive system according to claim 8, wherein said variable is determined on the basis of an operating amount of a vehicle accelerating member.

10. (New) The hybrid drive system according to claim 9, wherein said variable decreases with an increase of an operating amount of said vehicle accelerating member.

11. (New) The hybrid drive system according to claim 6, wherein said mode selecting means determines whether the engine is likely to stall if said direct engine drive mode is established, after it is determined that a difference between a speed of the engine and a speed of said electric motor begins to decrease.

12. (New) A method of controlling a hybrid drive system for an automotive vehicle, said hybrid drive system comprising: (a) an engine operable by combustion of a fuel to generate a drive force, (b) an electric motor, (c) an output member operatively connected to a drive wheel of the vehicle for driving the vehicle, (d) a planetary gear device having a first rotary element connected to said engine, a second rotary element connected to said electric motor, and a third rotary element, (e) a first clutch through which said second rotary element is connected to said output member, and (f) a second clutch through which said third rotary element is connected to said output member, said method comprising the steps of:

engaging said first clutch and releasing said second clutch to thereby establish a forward motor drive mode in which the automotive vehicle is driven in a forward direction by operation of said electric motor while said engine is at rest;

engaging both of said first clutch and said second clutch to establish a direct engine drive mode in which the automotive vehicle is driven in the forward direction by operation of said engine, with said planetary gear device being rotated as a unit, and for releasing said clutch and engaging said second clutch to establish an engine-and-motor drive mode in which the automotive vehicle is driven in the forward direction by operations of both of said engine and said electric motor;

determining whether said engine is likely to stall if said direct engine drive mode is established, when it is determined that a vehicle drive mode should be switched from said forward motor drive mode to said direct engine drive mode; and

commanding said forward-engine-drive control means to establish said engine-and-motor drive mode, when it is determined that the engine is likely to stall if said direct engine drive mode is established.